ALCOHOLISM IN THE NAVY:
A COST STUDY

Robert Tracy Sanders

THESIS

ALCOHOLISM IN THE NAVY:

A COST STUDY

by

Robert Tracy Sanders

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) ALCOHOLISM IN THE NAVY: A COST STUDY		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis; March, 1975 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Robert Tracy Sanders		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE March 1975 13. NUMBER OF PAGES 102
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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DD FORM 1 JAN 73 1473 (Page 1) EDITION OF 1 NOV 65 IS OBSOLETE S/N 0102-014-6601

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Block 20. Abstract - Cont'd.

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In the course of obtaining the estimate it was necessary to attain a better understanding of the alcohol abuse problem plagueing the United States. Consequently, a study of the prevention, recognition and treatment of the alcoholic, as well as other associated areas in both the civilian and Naval communities was undertaken.

Conclusions drawn from the data gathered are reported along with derived cost estimates on an individual and Navy-wide basis. Additionally, recommendations to improve the procedures and results of this study are made in order to benefit future researchers.

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A COST STUDY

by

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
March 1975

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The primary objective of this thesis is to estimate a lower limit of costs which are associated with the Naval alcoholic. The costs are estimated in Four specific areas: (1) Damage and Loss of Navy Property, (2) Loss of Work Due to Medical Problems, (3) Loss of Work Due to Drinking Patterns, and (4) Legal and Administrative Expenses. By obtaining such an estimate it is hoped that the Navy can more accurately calculate the savings involved when conducting cost analyses in the future.

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I. INTRODUCTION

The problem of alcohol abuse has long been one of the major social dilemmas plagueing this country and the world. Until recently, however, little was done to educate the great mass of the American people as to the seriousness and enormity of the disease. Today, an energetic effort on the part of individual researchers, medical personnel, federal, state, and local governments, and all facets of the news media has caused the American people to be bombarded with fact and fiction about alcohol. There are movies, television "specials," magazine articles, newspaper articles, books, T-V commercials, etc., which are constantly reminding us of the nations number one drug problem. Additionally, since 1971 the policy of the US Navy has also shifted toward an emphasis on drug and alcohol abuse and the related areas of prevention and rehabilitation.

The Alcoholism Prevention Program inaugerated by the Navy in 1971 has given rise to a large scale rehabilitation process. The cost of this program is approximately $8-9 million dollars annually and still increasing. Consequently, at the present time there are many research projects being conducted by various members of the Navy and the medical profession which quite naturally are used to either attack

or defend the cost of the existing program and the expected expansion of this program.

To the author's knowledge, of the studies conducted to date none have dealt with the more difficult to measure "hidden" costs of alcohol abuse. These hidden costs are those associated with the often overlooked consequences of alcohol abuse which cannot easily be defined in a monetary context, e.g., deaths resulting from the disease, early end to promising careers, inefficiency, property damage, legal and administrative expenses, etc. It therefore seemed appropriate that some effort be made to collect and assimilate data concerning some of these areas and then to transpose this data into a meaningful estimate of actual dollar costs. These costs, or perhaps a modified version of the procedures followed, could then be used in future cost avoidance studies to improve the accuracy of those analyses. The methodology used to collect and collate the data and also to obtain cost estimates is discussed in Chapter IV which explains in detail the entire procedure followed.

Obviously it would be quite meaningless for one to administer a survey, gather information and then try to interpret that information if he had only a superficial knowledge of the subject matter. It was necessary therefore to conduct research into many facets of the alcohol problem

including the various techniques and approaches utilized by civilian communities, clinics and organizations as well as those used in the Naval alcohol abuse program. In so doing it seemed quite natural to make general comparisons in methodology between the civilian and naval communities. Conclusions drawn from these comparisons were quite interesting and provide some "food for thought" for both elements.

In addition to the attempt to determine some alcohol related costs not previously determined and the general comparison of civilian and naval rehabilitative procedures, this thesis also includes background and historical information on the growth and control of alcoholism in the U.S. and results of various studies conducted both in the civilian and Armed Forces communities which point out the tragedy and the enormity of the illness.

A. ALCOHOL: OUR BIGGEST DRUG PROBLEM[1]

"My name is Joe...and I'm an alcoholic."

Today, more and more people are hearing and speaking this familiar phrase.

According to the statistics compiled by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) about one in ten of the 95 million Americans who drink are problem drinkers. Although this is not overly impressive in itself some of the other facts gathered are:[2]

1. From 1960 to 1970 per capita consumption of alcohol in the U.S. increased 26 percent to an equivalent of 2.6 gallons of alcohol per adult per year.

2. Alcoholism is the third biggest health problem in the country after heart disease and cancer.

3. The dollar cost of alcoholism in the United States may be as much as $15 billion per year.

4. In half of all murders in the U.S. either the killer or the victim or both were found to have been drinking.

5. At least half of each year's 55,000 automobile accidents and half of the one million major injuries can be traced directly to a driver or pedestrian who is by legal definition under the influence of alcohol.

Other data compiled by other sources are similarly shocking:

1. Cirrhosis of the liver ranks seventh nationally as a cause of death.[3]

2. According to the Federal Aviation Administration, twenty percent of the fatal aircraft accidents in general aviation in 1971 involved alcohol consumption by the pilots of those aircraft.[4]

3. The Surgeon General of the Navy says that:

a) Every alcoholic harmfully affects the lives of four other people.[5]

b) Fifty percent of fatal accident victims were drunk at the time of their deaths.[6]

c) Twenty percent of all hospital admissions for adult males in the U.S. are alcohol related.[7]

4. Other Navy oriented studies estimate that:

a) The incidence of mortality among alcoholics is 15 per 1000 men vs. 2 per 1000 of the non-alcoholic population (these findings are similar to the civilian alcoholic death rate statistics).[8]

b) The Navy civilian and military employees have similar drinking patterns to the rest of society and therefore the fact that an alcoholic employee loses more than 22 work days a year and has twice as many accidents as the non-alcoholic is consistent with findings in other segments of American society.[9]

c) "Direct and open treatment of alcoholic problems clearly yields two results: (1) a reduction of sick days for each man treated, and (2) a change in both alcoholic related and general medical complaints...two measures of the effectiveness of treatment are the reduction of time lost from work in hospitalizations for any number of medical problems, and the parallel positive effect of treatment in reducing alcoholic problems requiring hospitalization."[10]

d) Results of an ongoing study of Naval officer personnel indicate that:[11] (1) 37.7% drink at least three to five times a week or more often. (2) 32.9% get drunk frequently enough to manifest a potential drinking problem (every weekend or more often). (3) 15.5% have been advised by a doctor, chaplain, member of the family or close friend to stop or cut down. None have stopped. (4) 7.1% were drunk on watch or at sea.

e) 22% officers and 27% enlisted men reported alcohol related inefficiences at work, i.e., not working a full day or substandard performance level.[12]

The Navy is aware of these statistics and since it is composed of a cross section of American society its drinking pattern is much like that of the civilian world. However, according to one survey "thirty-nine percent of the enlisted men and twenty-three percent of officers reported having experienced unfavorable consequences from drinking."[13] According to another study of all Naval Aviators hospitalized at Bethesda Naval Hospital's neuropsychiatric service between 1960-1970 as many as twenty-two percent had chronic alcoholism and about fifty-four percent were heavy drinkers.[14] These two studies could indicate that alcoholism is more prevalent in the Navy than in the civilian world.

As stated previously, the cost of the disease may be as much as $15 billion per year with much of the cost stemming from lost work time. But as for how much additional cost in the areas of inefficiency, accidents, property damage, medical problems, legal and administrative expenses, hospitalization, etc., is associated with alcoholism, one can only guess at the present time. The major objective of this thesis is to attempt to establish a price tag on some of these items in the hope that future studies may make a more accurate determination of actual costs.

What the various governmental agencies, civilian organizations and the Navy are attempting in the area of alcohol rehabilitation is the subject of a later chapter, however the major point behind the statistics quoted is that the disease known as alcoholism is a very serious problem in the United States today. One might inquire as to how this ugly and expensive situation developed and what was done previously to control the problem of alcohol abuse?

II. HISTORY OF ALCOHOL CONTROL

A. IN THE WORLD

From the day alcohol, apparently the oldest of the mind-altering drugs, was first sipped it has played an important role in the life of man. The "...wine that maketh glad the heart of man..."[15] was and still is an integral part of the religious, cultural and social ceremonies which have evolved throughout history.

The actual discovery of intoxicating beverages was not recorded. However there is evidence which indicated that such beverages existed in every recorded age of man's history. "The first known brewery appeared about 3700 BC in Egypt."[16] Since then distilled forms of alcohol were noted in all parts of the world from the Greek and Roman civilizations to the Aztec culture to ancient Asia where "the first reference to alcohol appears around 2000 BC."[17]

It is interesting to note that throughout recorded history there was continuous debate between the good and evil of alcohol. This conflict which continues today follows the same scenario as in ancient times. Regulations and laws were adopted in order to control the dilution of the beverage as well as to punish those who abused the drug. In Greek civilization fines were levied for "verbal and

physical attacks while under the influence"[18] and the Romans prohibited the use of alcohol by "women, servants, and all under thirty."[19] In the Chinese civilization where wine was introduced around 200 BC, drinking in moderation was the model as inebriation was considered immoral and injurious to ones health and reputation. In Asia, laws were instituted mainly to control the manufacture and distribution of alcohol. Penalties for participating in drinking parties were introduced which ranged from fines to death. The Buddhist religion completely discouraged the use of alcoholic beverages and prohibition was instituted many times in Japan after Buddhism became the national religion.[20]

B. IN THE UNITED STATES

The introduction of distilled alcohol in America did not occur until 1607 when it was brought by the early settlers to the Virginia Colony. Since that time we too have been involved in the conflict over the control, use, and abuse of alcohol. The early legal ramifications involved with the abuse of alcohol were relatively lenient in Virginia (the maximum penalty being twelve hours in the stocks plus a fine) but in the Massachusetts Bay Colony drunkenness was punished by "whipping, fines or the stocks."[21] It is interesting that the much harsher punishment under the law was in the Massachusetts Bay Colony

where the Puritans urged not total abstinence but moderation in drink. At this time brewing was the third most important industry in that colony.

Where alcohol was concerned the idea of moderation in drink remained the ideal for several decades until 1785 when Dr. Benjamin Rush, one of America's foremost physicians, published a pamphlet entitled "Inquiry Into the Effects of Ardent Spirits Upon the Human Body and Mind." In this treatise Dr. Rush advocated the complete abstinence from spirits. He listed and described several diseases and maladies which "are the usual consequences of the habitual use of ardent spirits"[22] in an effort to persuade his readers that to imbibe would surely bring about serious illness.

The cry of abstinence was quickly picked up and in 1813 the first temperance society in America was founded. By 1855 thirteen states had legislated prohibition laws (all were subsequently repealed after a short number of years).[23] The lack of enforceability of the law in each of these states should have awakened people to the problems which were to come later when National Prohibition was put into effect. However, the anti-alcohol contingent continued to grow and with the establishment of the Women's Christian Temperance Union in 1874 and the Anti-Saloon League in 1893 there evolved a powerful organization (composed primarily

of women) with tremendous political influence. The leagues lobbying succeeded in getting both the Volstead Act and the Eighteenth Amendment passed and consequently both went into effect at midnight January 16, 1920. Together they prohibited the manufacture, sale, and transportation of intoxicating beverages and also set up the organization and procedures for enforcement of Prohibition. Quite obviously few realized how difficult it would be to enforce the law or what would be the extent of the role played by organized crime during Prohibition.

The lawless period which followed proved only that you can poison a horse's water but you can't stop him from drinking. The law lacked the support of the great majority of people and was therefore ineffective. Not only did Prohibition fail to eliminate the use of alcohol but some blame the disrespect for the law and the police in our society today on the tremendous increase in major crime and the corruption of politicians, police, and Prohibition agents during the Era.[24] At any rate, after thirteen years the Eighteenth Amendment was repealed and America's effort to control the manufacture, distribution, and sale of our most dangerous drug had failed.

Since Prohibition the ideas concerning the control of alcohol have shifted from an attempt at complete control

to a situation where very little control is exercised. Instead, control over the person who consumes alcohol is again the position held by the American public. In other words as in the days of the Puritans, drinking in moderation is allowable but public drunkenness is forbidden by law. The prevailing attitude was that drunkenness was a criminal offense and the best way to handle the drunk was to punish him. Besides, he was only a "red-nosed, skid-row bum"[25] anyway.

Gradually, with the founding of Alcoholics Anonymous in 1935 and through the efforts of E. M. Jellinek and other well-known alcohologists, who stimulated new thoughts concerning the alcoholic, the American public became more aware of the problem of alcoholism. In 1940 the Yale University Center of Alcohol Studies began publishing the "Quarterly Journal of Studies on Alcohol." The National Council on Alcoholism was founded in 1944. The North American Association of Alcoholism Programs was originated in 1949 and in 1952 the Christoper D. Smithers Foundation began to provide financial resources to various organizations afflicted with alcohol research and rehabilitation.[26] Because of these various organizations and the people involved in them, new studies were undertaken and extensive research conducted and publicized which began

to change the people's attitude concerning alcoholics. Probably the most important work was carried out by Jellinek, who, after three years of intensive study and research published in 1960, a book entitled "The Disease Concept of Alcoholism." This book has since become a "classic reference work in the field."[27] It has had tremendous influence on the follow-on research in the area of alcoholism, and on the national and local organizations concerned with the alcohol problem. The combined influence of the aforementioned organization and the book have, in turn, influenced the rest of society to the point where business management and organized labor now tend to accept the concept of alcoholism as a disease, the AMA has formally accepted the disease conception and in 1967 under the District of Columbia Alcoholic Rehabilitation Act "public intoxication (was) officically recognized as more of a medical than a criminal problem."[28] Similarly, in 1966 two Federal Courts of Appeals decisions (Easter v District of Columbia and Driver v Hinnart) essentially took the problem of the chronic alcoholic out of the criminal courts and put it into the hands of public health programs.[29] Specifically, in "Easter" the court held that a "chronic alcoholic cannot be convicted for his public intoxication"[30] and in "Driver" the court held that to convict a chronic alcoholic for public intoxication and thus

to ignore the common-law principle followed in "Easter", violates the prohibition against cruel and unusual punishment contained in the Eighth Amendment..."[31]

Today, the disease concept of alcoholism is becoming more widely accepted in all segments of our society. Although there is still a stigma attached to the condition of alcoholism, because of the belated but positive leadership of the federal government this stigma is slowly being broken down as alcohol education is increased and upgraded. The legislation passed which provides the leadership is the Alcohol Abuse and Alcoholism Prevention and Rehabilitation Act of 1970. In essence the bill states: "This legislation would establish administrative structure and authorization for an unprecedented, massive, across the board federal attack upon the problem of alcoholism in this country."[32] This act together with the Alcohol Rehabilitation Act of 1968 provided the first "statutory comprehensive national program for Alcoholism Care and Control in the United States."[33]

C. IN THE US NAVY

In general, the historical development of alcohol control in the Navy paralleled that which has taken place in the civilian world. The original methods for handling the problem were to punish the offenders while preaching

moderation in drink. The daily ration of grog which was deemed one of the luxuries of the sea going sailor was considered as much a part of the sailor's routine as his meals. On September 1, 1867 the American Navy instituted its own form of prohibition by discontinuing and forbidding even the presence of alcohol on board ship for other than medicinal purposes.[34] This regulation continues in effect today. However it is recognized that the discontinuance of the grog ration has in no way curtailed the incidence of alcoholism by personnel in the Navy and indeed it is also recognized that an alcohol abuse problem exists in the Navy as in the other segments of American society.

As the emphasis of the federal government was being placed on the "need to deal with alcohol abuse as a public health problem rather than as a criminal one"[35] the Armed Services naturally were only one step behind. In fact it could be said that the Navy was on a par with the trends because by the Fall of 1968 the alcohol rehabilitation center at the Naval Hospital, Long Beach, California, was officially approved and funded as a pilot program.

Recent official recognition of the problem encountered by all the Services came in 1971 in the form of Public Law 92-129 "Identification and treatment of Drug and Alcohol Dependent persons in the Armed Forces". This was followed

by DoD, SECNAV, OPNAV and BUMED[36] directives. These directives outlined the policy changes which began to"pave the way for more humane and efficient approaches to the problem drinker".[37]

In addition to containing specific details regarding rehabilitation of alcoholics and alcohol abuse in the Navy, the above directives comment on official policy, particularly OPNAVINST 6330.1 of 29 May 1973 which states in part: "to minimize the incidence of alcoholism, commands should make every effort to eliminate institutional practices which may almost subliminally encourage personnel to drink through peer pressure or outmoded customs. It is often expected under present customs and beliefs that to be a 'real Navyman' one must join in drinking excessive quantities of alcohol as a badge of courage, a mark of respect or a symbol of adulthood and virility. On the contrary, an increasing tolerance for alcohol in large amounts is a positive symptom of alcoholism. Consequently, moderation should be emphasized at ship's parties and picnics, happy hours, wetting-down and advancement celebrations, initiations, hail and farewell parties, graduations, etc. Educational programs, as well as leadership and example set by officers and petty officers, are essential to changing attitudes in this regard."

The above policy emphasizes the importance of the Alcoholism Prevention Program and the establishment of the numerous facilities necessary to the program serves to doubly emphasize its importance. Beginning with the pilot research program in Long Beach the Navy alcohol abuse program has grown to include no less than:

1. Five Alcohol Rehabilitation Centers (Long Beach, Norfolk, Great Lakes, San Diego, and Jacksonville),

2. Fifteen Alcohol Rehabilitation Units in Naval Hospitals throughout the world,

3. Four Alcohol Rehabilitation Drydocks.

As was mentioned previously, this is a multi-million dollar operation and still growing.

As can be readily inferred from the above historical review it appears that we have made a complete circle and are now headed toward a new period of alcohol control. Instead of punishing the alcoholic or the public drunk the trend now is to help and rehabilitate the chronic abuser. Instead of passing laws to limit the manufacture and sale of alcoholic beverages the government spends funds on educational seminars, research, advertisements, and various other programs which attempt to enlighten the public in the many facets of alcohol abuse. The primary reason for this new approach is the widespread acceptance of the theory

that alcoholism is a disease and as such is preventable and treatable although prevention and treatment procedures are somewhat different than that associated with normal illnesses. The next chapter discusses the topics of treatment and prevention as well as other related areas of the illness and compare many of the approaches used in the effort to control alcoholism.

III. PROGRAM FACTORS

A. DEFINITIONS AND CAUSALITY

It is generally recognized that in order to treat an illness properly, or to prevent the occurrence of an illness, it is first necessary to determine the underlying cause or causes of the condition. Similarly, in order to determine the cause of a particular illness it is first necessary to understand the illness itself and its effects on the individual. Therefore in determining the etiology of alcohol abuse, one requires a descriptive definition of alcoholism.

Unfortunately, there is no one all encompassing definition of the affliction or afflicted person. Similarly, as will be shown later, there is no one cause of the problem nor is there one method of treatment.

Of the plethora of definitions concerning alcoholism a few of the more notable (notable because of the esteem and influence of the author or organization) follow:

1. Alcoholics Anonymous: "Alcoholism is an increasing physical sensitivity to alcohol...an allergy... coupled with a mental obsession so subtly powerful that no amount of human willpower may break it."[38]
2. American Medical Association: "Alcoholism is an illness characterized by preoccupation with alcohol and loss of control over its consumption such as

to lead usually to intoxication if drinking is begun; by chronicity; by progression; and by tendency toward relapse. It is typically associated with physical disability and impaired emotional, occupational and/or social adjustments as a direct consequence of persistant and excessive use."[39]

3. Mark Keller: "A chronic and usually progressive disease, or a sympton of an underlying psychological or physical disorder, characterized by dependence on alcohol...Or a learned (or conditioned) dependence upon alcohol..."[40]

4. World Health Organization: "Any form of drinking which in its extent goes beyond the traditional and customary dietary use or the ordinary compliance with the social drinking customs of the whole community concerned, irrespective of the etiological factors leading to such behavior and irrespective also of the extent to which such etiological factors are dependent upon hereditary, constitutional or acquired physiopathological and metabolic influences."[41]

5. Dr. E. M. Jellinek: "Any use of alcoholic beverages that causes any damage to the individual or society or both."[42]

6. U.S. Navy: "Alcoholism...a chronic, relapsing progressive disease characterized by loss of control of drinking alcoholic beverages to the point of interferring with interpersonal relationships, the ability to work and health."[43]

The major point of commonality between the above definitions is not the excessiveness of drinking nor the causes of drinking but that alcoholism is an individualized disease and that regardless of the quantity consumed the illness is defined as appearing when such dependence on alcohol affects the physical or spiritual well being of an individual to the point where he is unable to function according to the accepted precepts of society. The Navy has recognized this point and consequently has stated officially that "Alcoholism, in itself, should not be considered as grounds for disciplinary action.[44] Rather the performance and behavior or the individual in conjunction with a suspected alcohol problem are the criteria used in determining the fitness of an individual for the Naval Service.

Another interesting point one observes when analyzing the many and varied definitions of alcoholism is that many of the definitions include characteristics of the disease or other maladies associated with it. It is quite probable

that in attempting to define alcoholism the idea of causality entered the various authors' minds and since they were not quite sure whether the illness of alcoholism was a cause, effect, or both, of some other disorder they decided to include certain characteristics of the disease in order to give their definitions more substance. It is difficult for the layman to ascertain clearly what are the causes of alcoholism primarily because it has been difficult for the specialists to ascertain them. Such is the nature of the complicated disease that "highly qualified researchers...have for years been unable to determine whether alcoholism is a physical or mental problem."[45]

This conflict existing among alcohologists is very well illustrated in William Madsen's recent book entitled "The American Alcoholic." In it Mr. Madsen discusses many of the prominent theories on the etiology of alcoholism finally concluding that alcoholism is a physical, psychological and cultural disability and in order for successful treatment it must be approached simultaneously at each of these levels. Whether this concept of alcoholism is correct will only be known at some future time after considerably more research, however, there are many who do agree with this approach. The disagreement over the actual cause of the problem, i.e., personality, heredity, general

constitution, psychotic or psychopathetic tendencies, environmental factors, occupation, physiological tolerance, drinking customs, etc., quite naturally leads to different viewpoints as to treatment methods.

B. RECOGNITION: THE HUMAN ELEMENT

Before an individual can undertake a rehabilitation program for his alcohol problem it must first be recognized that a problem does, in fact, exist. The reader of the preceding sentence might think "that's an obvious statement," and this writer agrees. However, in the past there has been such a social stigma attached to the condition of alcoholism that neither the alcoholic himself nor his family and friends have faced up to the fact, and instead of recognizing the problem, everyone concerned suppresses it.

Assuming now that one decides to be frank and open with himself or others, how does he determine whether or not he, his friend, employee, wife, etc., has an alcohol dependency?

In this area there has been much written in an attempt to inform not only the layman but also the professional of the symptoms of alcoholism. At the present time there are no biochemical tests for alcoholism so one must rely primarily on the behavior of the individual as an index for alcoholism.

Since the practicing alcoholic becomes very adept at covering up his problem especially from himself it is more likely that the initial recognition of the problem will come from someone other than himself. Actually, according to Navy statistics, less than thirty percent of the patients admitted to Alcohol Rehabilitation Centers are voluntarily admitted, the rest are ordered there by other authority.

In industry as well as in the Navy there are certain clues which when combined with some clearly delineated behavioral errors tend to indicate an alcohol problem. It is generally up to the supervisor to recognize these symptoms and eventually make a valued judgement on the condition of his subordinate. The key word here is "eventually" because "eventually" is almost always when the alcoholic has progressed to the more severe stages of his illness, and as is the case with all illnesses the longer one waits before being treated the more difficult it is to obtain the "cure."

Generally, the reason the supervisor waits such a long time is that he has a reluctance to intrude into the private lives of his employees and until the alcohol begins to affect the work or performance of the individual the supervisor will not interfere. This is in fact the

official policy of the federal government and the U.S. Navy. Navy policy as written in SECNAVINST 5300.20 paragraph 5.e. states that "It is the private decision of an individual to use or not to use alcoholic beverages lawfully unless his use of alcohol interferes with the efficient and safe performance of his duties, reduces his dependability, or reflects discredit on the Department of the Navy."

That a person has become an alcoholic or at least alcohol dependent to a limited extent is usually obvious. What is required though is that employers, supervisors, commanding officers and, indeed, all segments of society be educated in the symptoms of alcoholism so that they are recognized early and that action is initiated to introduce the individual into the rehabilitation process.

C. TREATMENT

1. Civilian Facilities and Procedures

Whenever the terms "treatment" and "alcoholism" appear together one organization above all others comes to mind - Alcoholics Anonymous. There has been such a wealth of material written about A.A. that this writer does not feel it necessary to duplicate that material in this paper. However, in order to refresh the readers' mind as to the more salient aspects of their treatment

philosophy a brief summary of A.A.'s "unscientific" approach is necessary.

The basic idea behind the entire treatment process is one of a spiritual uplifting. As is readily inferred from the Twelve Step Approach (see Appendix A), religion or at least a belief in some higher power, is one of the prerequisites to successful treatment.

Another basic notion which is very important in the initial stages of recovery is acceptance of the disease concept of alcoholism. In accepting this concept the alcoholic is convinced that he could not have avoided his drinking because the disease is viewed as a force beyond his control and therefore a stronger force (A.A.) is required if control is to be regained. The alcoholic can then use A.A. as a tool to begin his recovery.

The rehabilitation process itself has been called "organization therapy" and defined as a "therapy involving the structure and processes of the total social system of the association."[46] Organizational therapy is group psychotherapy on a much larger scale and higher level. It is derived from the fact that "every recovered alcoholic in the program has lived through the same episodes which the still suffering drinker is undergoing"[47] thus creating a realistic and trusting identification with every other member of the association.

Alcoholics Anonymous is the oldest, largest (over 650,000 members),[48] and to date the most successful organization engaged in the treatment of alcoholics. This record has been achieved entirely without formal professional guidance from psychiatrists, psychologists, etc. Apparently, "experience provides the basis for direction and guidance"[49] in A.A. Alcoholics Anonymous is also one of the more inexpensive means by which sobriety can be attained. Anyone can be a member, there are no required dues, and no one is permitted to contribute more than $300.00 per year to the organization.

In addition to A.A. there are approximately 7500 other treatment centers scattered throughout the country.[50] Each center offers at least one approach in its treatment program. The type of approach used at a particular clinic is dependent upon the individual director, his experience, his knowledge, his beliefs concerning causality, if any, and the facilities available for use.

Typical models of rehabilitation centers are Chit Chat Farms in Pennsylvania and Lutheran General Hospital northwest of Chicago. The primary element used at both places is group support and therapy. At Chit Chat the patients are told that the cure can be successful and that they will not have to recover alone. The

patients then proceed to bolster each other during the treatment, much like A.A. Interestingly, half the staff are recovered alcoholics. The staff is not concerned with the whys of drinking but on how drinking can be stopped. The apparently fairly successful treatment process lasts 28 days and costs $840.00.

At Lutheran General where treatment runs 21 days and costs $1,827.00 the interaction of the patients is the basis of the program. After a patient is admitted and treated for withdrawal symptoms and given a medical examination he is assigned to one of three 25 patient teams which meet three times a week. In many instances wives, husbands children and even employers attend these sessions which consist of lectures, educational films and discussions about drinking problems designed to return the alcoholic to society. For its patients Lutheran General has a two to three month follow-up program which consists of continued interaction with some psychotherapy. The Medical Director, Dr. Nelson Bradley, estimates that after three years its success rate is about 50 percent but says that to attain any higher rate involvement of the family and/or the employer is necessary.[51]

There are still other types of approaches to treatment as illustrated by Seattle's Schick's Shadel Hospital. This particular treatment combines group therapy,

hypnotic suggestion and an aversion treatment. The aversion treatment involves the administering of a drug to the patient after which he is given a glass of his favorite liquor. The alcohol in combination with the drug, induces nausea in the patient. This process occurs four times in the 11 day $1,500.00 program and theoretically conditions the patient to become nauseous whenever he drinks. The common criticism for such a program is that the aversion therapy is a short-lived cure without any long term effects. The director, Dr. J. W. Smith, notes that it is the "method that will do the best job in the shortest time."[52]

Another program in existence draws heavy criticism because of the controversial nature of its technique. The Coatesville Veterans Administration Hospital in Pennsylvania includes the typical group and individual psychotherapy, general anti-drinking seminars and even music therapy but, in addition, also allows its patients one or two ounces of pure alcohol once an hour from 9 a.m. to 9 p.m. This program is more of a research project than a treatment center, but as Dr. Gottheil argues "traditional centers either study alcoholics without their alcohol or alcohol without the alcoholics."[53] He further believes that the practice of complete abstinence for the alcoholic interferes with research and that of greater importance is the fact that

thirteen times a day the patient must make a conscious decision: to drink or not to drink. Although the most accepted belief in alcohol research circles is that a recovered alcoholic can never drink again, Dr. Gottheil claims that in a follow-up study of his first group after six months "approximately half of the group members were either dry or drinking less than twice a week."[54]

Since the federal government began to become officially aware of the alcohol problem it has acted to assist in the handling of the situation. The government has begun to fund various programs to assist in research, education, rehabilitation as well as to assist state and local programs. Federal spending has increased from an initial $70 million in 1971 to $194 million in 1974. This is a tremendous amount of money by itself. However, when one considers the additional funds in the form of private endowments and state and local government spending, one begins to realize what an enormous amount of money is being invested into finding a solution.

Approximately 85% of the federal funds for alcoholism being spent are alloted to treatment programs and facilities. Standard treatment calls for an initial stay at a detoxification center (Local Alcoholism Reception Centers) after which the patient is transferred to a

"half-way" house which handles the rehabilitation process as an outpatient type situation.[55]

2. U.S. Navy - Alcoholism Prevention Program

As was mentioned previously the formal requirements for the establishment of an Alcoholism Prevention Program in the Navy came about as a result of the passage of Public Law 92-129 and by various Department of Defense and Department of the Navy directives.

The overall success of the entire program is dependent upon each and every member of the Naval Service as is inferred from the primary goals of the program:

"a. To promote attitudes of responsibility with respect to alcohol in those persons who choose to drink, and the social acceptability of an individual's decision to not drink.

b. To achieve general acceptance of alcoholism as an illness that is preventable and treatable.

c. To remove stigmatic effects associated with alcoholism, which militate against proper referral for treatment and subsequent restoration to full duty.

d. To teach supervisory personnel how to detect alcoholism in its early stages, how to induce the alcoholic person to seek treatment, and to provide knowledge of the treatment facilities available.

e. To acquaint personnel with the most effective methods of treating alcoholism.

f. To encourage the treatment and rehabilitation of alcoholic persons and alcohol abusers.

g. To promote the acceptance of the recovered alcoholic person as a useful, reliable member of the military community."[56]

The core of the programs are the treatment programs and rehabilitation facilities.[57] The facilities consist of:

a. Alcohol Rehabilitation Centers which are the largest facilities in the program. The centers have a capacity for 75 patients and offer a six to eight week intensive inpatient treatment approach which is administered by degreed and non-degreed professionals, most of whom are active Navy and recovered alcoholics.

b. Alcohol Rehabilitation Units, which are smaller versions of ARC's, have a capacity to treat fifteen to twenty persons on an inpatient basis. The ARU's are colocated with Naval Hospitals, headed by a staff medical officer, employ one or more Navy counselors and have treatment programs similar to ARCs.

c. Alcohol Rehabilitation Drydocks, a relatively new concept, strive to treat the individual with minimum time away from his command. In an ARD a patient undergoes two

weeks treatment as a resident, reports for duty but returns for additional therapy, instruction and counseling.

The treatment process at each of the above facilities is basically the same with minor procedural changes. The Navy's approach to rehabilitation is a multi-faceted one with a basic core of:[58]

a. Viewing alcoholism as a disease.

b. Education of the patient in a school-type setting, with a goal of full understanding of the disease.

c. Using para-professional personnel in a one-to-one relationship with the patients.

d. Providing individual attention to patients, to help isolate particular areas of conflict. This may be done in both counseling and group therapy sessions.

e. Education and involvement of significant family members.

f. Long term maintenance of sobriety through Alcoholics Anonymous and antabuse.

Once a patient is admitted to the ARC he receives a thorough medical and psychiatric evaluation. If the patient is diagnosed as an alcoholic he is admitted to the facility where he "receives six to eight weeks of rehabilitation involving medical, psychiatric and psychological approaches, introduction to the principle of AA and AL-ANON, and

education about alcohol, alcoholism and other drug abuse in general. Lectures, films, group therapy and individual counseling are used. The therapy is conducted by physicians, psychologists, counselors (recovered alcoholics), chaplains, nurses, and corpsmen. The patient is treated with respect and dignity in an environment which is run like any other command (reveille, uniform of the day, chain of command, etc.)...In the forefront of all therapy is the attitude that alcoholism is a disease which, although it cannot be cured, can be arrested, like diabetes; that the alcoholic is not a helpless victim of his disease but that he must begin to accept responsibility for his drinking much as the diabetic must assume responsibility for his diet; and that although he will have help, he bears the major responsibility for his recovery. Wives are involved in the rehabilitation process wherever practical in order for them to understand how the disease has affected the family and how to cope with problems."[59] The emphasis is placed on present and future behavior patterns and functioning which will enable the alcoholic to return to work and social environments with the ability to live happily and perform satisfactorily without alcohol.

The keystone of the long term rehabilitation process is Alcoholics Anonymous. "AA is not only of great

importance in helping an alcoholic become comfortable without drinking, it is an important social outlet for the serviceman and is available all over the world. A major part of the recovering alcoholic's difficulty is the fact that he often does not know what to do with himself while on liberty. Formerly, he headed for the nearest bar and returned when his liberty period expired. Now that he is beginning to become sober he can make friends in AA, drink coffee with them and socialize in a healthy way. Through his association and identification with the members in AA the alcoholic gradually loses his alienation, his rationalization and his maladjustment to life."[60]

The major tool used for implementing the rehabilitation process is the CODAC (Collateral Active Duty Alcoholic Counselor). These are recovered alcoholic active duty personnel who have been designated CODACS by BUPERS. CODACS are available to lend help and support to other alcoholics as well as to support their own commands in the form of advice and ideas when called upon. At the ARC's they serve as the counselors for the patients. They are "especially skillful at recognizing the various devices and manipulations used by the alcoholic and can quickly bore through his shell and deflate him so that his denial can be exposed and he can begin to be honest with himself."[61] Additionally the "recovered alcoholic is used as a positive identification figure, as well as someone who

can be trusted, because of his intimate understanding and experiences as an alcoholic. The professional is usually viewed with suspicion by the alcoholic. Only after a good working relationship with the recovered alcoholic counselor, will the alcoholic allow more than just a superficial relationship with non-alcoholic professional personnel."[62] The counselor is "usually intimately involved with Alcoholics Anonymous, and can readily present this part of the program to the patient."[63] He can also be effectively utilized in the "one to one relationship and group rap-sessions"[64] because of his past experience as an alcoholic and the insight to situations which he alone can relate.

It is recognized that in the foregoing discussion on treatment and rehabilitation of the alcoholic very little emphasis was placed on help for the skid-row alcoholic. This was not done to denigrate the very important and humane efforts of the Salvation Army, social workers or the various other rescue missions engaged in providing physical, mental, and spiritual help to homeless alcoholics. However, since only three percent of the nations alcoholics are those considered homeless and unemployed and the great percentage of monies for research and rehabilitation is funneled in other directions it was decided that for purposes of this paper emphasis would be placed on the programs which involve and accommodate the greater majority of alcoholics.

3. Summary

In debating the various approaches to treating the alcoholic it was quite clear that none of the treatment programs directly attempted to combat the causes of the disease but rather emphasis was placed on arresting the symptoms of the disease. As was concluded before, there is no agreement on a particular cause. However, there is agreement that the disease is extremely complicated and affects different persons in different ways.

The complexity of alcoholism requires that the rehabilitation approach be "an eclectic, comprehensive, multi-disciplinary one which blends traditional and innovative techniques, professionals and non-professionals, and which provides an opportunity for the drug abuser to participate in the decision as to which avenue of help will be used."[65]

This writer believes that the approach used by the U.S. Navy is probably one of the better methods used anywhere. It combines the standard techniques used by most treatment facilities, but also utilizes other drugs (disulfiram), has a much longer treatment period than most, includes AA as an integral part of the program, and by means of the volunteer Referral Network effectively utilizes the world-wide facilities of AA which may be the most important aspect of the program. The Referral Network provides a "point of focus

for the man returning to duty from a treatment center. Usually, by the time a man returns to his command, local volunteers have already received a letter or telephone call from the treatment facility alerting them to the man's presence in the area. The volunteers seek out the man, help him locate nearby meetings of Alcoholics Anonymous; introduce him to other people in his command who are also recovered alcoholic persons, and generally assist him in developing his own program for continued sobriety."[66]

In the final analysis the only way to compare the various treatment programs is to compare their effectiveness. Unfortunately as noted by Marc A. Schuckit and Don Cahalan in their "Evaluation Of Alcohol Treatment Programs" there has been no standardized or consistent method used in the evaluation of treatment programs. So even though "both recent and past research indicate that most programs, irrespective of their therapeutic interests, treatment facilities or enthusiasm with which patients are treated, report a success rate of between 25 and 30 per cent"[67] and the Navy reports an approximately 70 per cent success rate there is probably little basis for comparative judgements.

D. PREVENTION - THE BEST SOLUTION

The long range objective of the on going research and study in the field of alcoholism is the prevention of the

illness. Prevention should encompass much more than preventing the occurrence of the illness, it should also include:

1. Preventing increases in the incidence of alcoholism.
2. Preventing the progression of the illness.
3. Preventing its recurrence.

The basis of any prevention program must be education. As Seldon D. Bacon, Director of the Rutgers (then Yale) Center of Alcohol Studies stated at the First Annual Conference on Alcohol Studies: "There are no pink pills or royal highways to solutions. It will take time and the cooperation of an enlightened public to accomplish a reduction in the incidence of alcoholism."[68]

Alcohol education should be aimed at all segments of society, however, it is the young who must receive the primary emphasis. They must be taught by the parents through example at home and by the professionals at school. An honest approach is necessary with alcohol treated as any other drug, although, unlike other drugs it is legal.

An effective prevention program must rely on the cooperation of all. A return to complete control (Prohibition) of alcohol today would probably be met in the same fashion as it was in the twenties. However, certain other types of legal controls should be considered, for instance:

1. Increased taxation of alcoholic beverages.

2. A review of licensing procedures.

3. Stricter limitations on hours of sale.

4. Better enforcement of existing laws concerning drunk driving and possession and sale involving minors.

The federal and state governments which fund many educational programs, seminars and advertisements aimed at making the public aware that alcoholism is a treatable condition is being aided in its fight by the liquor industry. This $18.3 billion a year industry (after taxes)[69] has begun promoting moderation through advertising and posters. Seagrams spent $250,000 for ads aimed at excessive drinking in 1973 and Licensed Beverage Industries Inc. spends $150,000 a year on research and $250,000 for the promotion of drinking in moderation. Additionally, liquor industry representatives are meeting with other experts in the field of alcohol in an attempt to cooperate on new educational programs.

The amount spent by the liquor industry is small in comparison to the pain and depression which its product causes but at least they are beginning to pull together and assist in developing worthwhile projects to counter the disease. This is the kind of attitude essential to all in order for a prevention program to be effective.

IV. A STUDY OF ALCOHOL RELATED NAVY EXPENSES

A. PROCEDURES

As previously stated, the major purpose of this thesis is to estimate a lower limit or minimum cost to the Navy caused by the Naval alcoholic. The study and research conducted is not all encompassing but instead is directed towards four specific areas: (1) Damage and loss of Navy property and equipment because of alcohol abuse, (2) Cost of work time lost as a result of sustaining physical injuries or medical problems which are alcohol related,(3) Cost of work time lost as a result of remaining away from or failing to return to work because of drinking patterns, and (4) Alcohol related legal and administrative expenses.

Since most of the information concerning these areas of expense would be difficult to obtain by surveying an individual's medical and service record it was decided that a more efficient approach would be to elicit responses from recognized alcoholics. In many cases only the alcoholic himself knows which occurrences, i.e., physical injuries, NJP, property damage, etc., were a result of alcohol abuse. Therefore, a questionnaire was devised and utilized as the communication medium and the data gleened from the responses to the questions was used as the basis for the cost

determination. Because of the procedure used in elliciting responses from alcoholics(questionnaire) there is a built-in, inherent tendency to underestimate the number and extent of occurrences. This tendency pervades the entire study and is discussed in more detail later.

The questionnaire was administered to those patients at the five Alcohol Rehabilitation Centers who were undergoing treatment for alcoholism. Only those patients in the final phase of rehabilitation, i.e., those in their last one to three weeks, were queried because it was thought that more frank and truthful replies would be garnered from this group than from others who perhaps had just begun treatment.

The approach used in determining the cost to the Navy is one which takes the data gathered in the survey and utilizes it to determine specific costs. In particular, the percentage breakdown of the respondents by rate is used as the basis for distributing the dollar costs in areas (2) and (3), e.g., the survey results showed that 11% of alcoholics questioned are in pay grade E4, therefore the 11% figure was used for interpolation purposes based on the assumption that 11% of male enlisted alcoholics are in pay grade E4. In area (4) the hourly wage rate of the average alcoholic as described in the Demographic Profile is used.

The basic unit of cost determination in this study is the man-hour. The information and data resulting from this survey are transposed into work lost in man-hours which is multiplied by the appropriate cost per enlisted rate in order to determine an average cost per alcoholic per year.

MAN HOURS OF WORK LOST	X	HOURLY WAGE PER RATING	=	COST PER ALCOHOLIC PER YEAR

After this cost is derived in each of the four areas of interest, the individual costs are multiplied by the number of alcoholics in the Navy yielding an estimate of the overall cost per year.

COST PER ALCOHOLIC PER YEAR	X	NUMBER OF ALCOHOLICS	=	ANNUAL COST

This overall cost is shown in section IV-C-5 "Total Cost of the Male Enlisted Alcoholic to the Navy." All costs are considered to be "real" costs to the Navy caused by alcohol abuse, in other words, the occurrences which are used to derive the costs would not have happened except as a result of alcohol abuse.

B. EXPLANATION OF QUESTIONNAIRE

The questionnaire which was administered at the five Alcohol Rehabilitation Centers to 110 male enlisted men contained fourteen questions. The first nine of these

questions are biographical in nature and attempt to determine general characteristics of the average alcoholic. Questions 10-12 are concerned with drinking patterns and attitudes and inquire into alcohol consumption rates on extended sea duty or on shore assignment and also attempt to gain insight into the success of the Navy's goal to reduce the stigma attached to being alcoholic. The final two questions and their several parts are used as the basis for estimating the minimum alcohol related costs in the four areas mentioned above.

C. RESULTS

1. Summary of Responses to The Questionnaire

The following paragraphs contain a summary of the responses obtained from the 110 male enlisted personnel sampled. The questionnaire which was used to elicit the responses is shown in Appendix B.

(a) Sample Profile:

EM RATING	PERCENTAGE
E1	.9
E2	11.9
E3	21.1
E4	11.0
E5	22.0
E6	20.2
E7	11.0
E8	1.8
E9	0.0

Years of service: minimum=½, maximum=25, mean=8.6

Age: minimum=18, maximum=43, mean=27.98

Last Duty Assignment: Sea Duty=44.8%

Shore Duty=55.2%

Marital Status: Married=59.1%

Single= 40.9%

There were 33 divorces and 23 separations represented in the sample and of these, 60.6% of the divorces and 65% of the separations were alcohol related.

(b) Seventy percent of those sampled reported that they had volunteered for treatment of alcoholism while thirty percent indicated that they were referred for treatment by other authority. These statistics are in sharp contrast to those reported by personnel involved in the rehabilitation effort.

(c) When asked when they first encountered alcohol related problems in relation to their entry into treatment at an Alcoholic Rehabilitation Center the minimum length of time reported was one (1) year and the maximum was 24 years. The mean time was 5.5 years.

(d) When asked if they believed their consumption of alcohol increased after prolonged periods at sea 32.7% answered "yes", 6.4% answered "no," 25.5% answered "Remains the same" and 35.5% did not know.

(e) When asked if their alcohol consumption changed when they were assigned to shore duty 40.9% answered that it increased, 9.1% answered that it declined, 27.3% felt that it remained the same and 22.7% were uncertain.

(f) When asked if their record of being treated for alcohol abuse would seriously affect their career, 30% felt that there would be a stigma, 37.3% felt there would be no stigma and 32.7% were uncertain.

(g) Replies to alcohol related medical problems included a variety of broken bones, internal disorders, injuries due to fights and accidents and psychiatric hospitalization.

(h) Replies to alcohol related damage to property included damage to two shore patrol trucks, a jeep, numerous cases of theft and vandalism and damage to transmitters and electronic equipment.

(i) Included in the sample were 149 cases of Captains Mast and Courts-Martial and 81 civilian court cases: Total=230. Of the militarily handled offenses 26.4% were for unauthorized absence, and 13.9% were for disrespect or disorderly conduct. Of the civilian court cases 39.8% were for driving while intoxicated. The findings in this sample indicate an average of 1.35 military cases and .74 civilian cases per alcoholic.

(j) The sample unearthed the mean time of absenteeism for drinking during work hours to be 67.77 hours per alcoholic. Of those sampled 10.5% reported that they were absent from work two or more times per week because of drinking and 35.2% reported alcohol related absenteeism occurred at least once per month.

2. Assumptions

The necessary assumptions made in obtaining the results which follow were based on several variables ranging from the authors personal Navy experience to the data obtained from the survey to other research which has been conducted in the field of alcohol abuse. Additionally, they include:

(1) The Demographic Profile discussed below is a reasonable depiction of the characteristics of the average male enlisted alcoholic serving in the U.S. Navy.

(2) The hourly and daily rate of pay for the personnel discussed in the Cost Derivation section is based on the Composite Standard Military Rate Tables extracted from NAVCOMPTNOTE 7041 effective 1 January 1975, and provide and accurate estimate of true costs.

3. The Demographic Profile

Although there is no "typical" alcoholic a profile of the average Naval alcoholic was gleened from the responses

to the questionnaire. The profile depicted is one which is slightly different than that which was previously formed.

The average male naval enlisted alcoholic of today is in pay grade E5 with almost nine years of service. He is 28 years of age and has been having alcohol problems for about 5½ years. For a long while he didn't think he was any different than anybody else but recently he has noticed that his physical well being has deteriorated, that he has had more frequent scrapes with his leading chief and his division officer, and that he has been taking off more time during the week because of his involvement with some men who go to the EM Club to drink in the afternoons. Even though he couldn't seem to pinpoint his problem as alcoholism, after two trips to Captain's Mast for offenses committed while intoxicated he decided he had better seek help. His division officer, executive officer and commanding officer were very willing to assist in any way they could so consequently our average alcoholic was first sent to the Dispensary where he discussed his problems with a doctor, was given a thorough medical examination and subsequently sent to an ARC for treatment.

During the years prior to his receiving help, how much did he cost the Navy as a result of his alcohol problem in the areas of (1) damage or loss of Navy property, (2) medical problems which kept him away from work, (3) time

lost because his drinking was more important than his work, and, (4) legal and administrative expenses?

4. Cost Derivation

a. Damage and Loss of Navy Property

The damage to Navy property reported by the enlisted men sampled was very small. Although several cases of minor theft and vandalism were reported the only specific cases of actual damage or loss cited were: (1) destruction of a shore patrol vehicle, (2) damage to two other Navy vehicles, (3) theft of ships electronics equipment, and (4) damage to electronics equipment because of frustration. Since the type of equipment, year and make of the vehicles are unknown it is difficult to put an exact price tag on this alcohol induced property damage. However making the assumptions that: (1) replacement of an entire vehicle would be a minimum of $1500, (2) cost of repair to two other Navy vehicles would approximate $500.00, and (3) based on the apparent frequency involved as indicated by the accompanying explanations received on the survey form total cost for theft and damages to transmitter and electronics equipment would run over $2000.00 Therefore, cost is derived by first, dividing the total cost of damages by the number of alcoholics in the survey which yields the average cost per alcoholic; and second, dividing the cost per alcoholic by 5.5[70] years

which yields the average cost per alcoholic per year:

$\frac{\$4000}{110}$ = \$36.36 per alcoholic. \$36.36 ÷ 5.5 years = \$6.61 per alcoholic per year. These costs are reportedly directly caused by alcohol abuse and as such are interpreted as "real" costs to the Navy.

The above figures may seem smaller than one would expect and it is believed that the size of the sample space had a large effect on the results obtained. However, based solely on the results of this survey one cannot draw specific inferences concerning an average value for damage to Navy property. In this particular area of concern there is obviously a difficult hurdle to jump in order to obtain more reasonable estimates. Recommendations on how to approach future studies in this area will be discussed in a later section of this paper, however it would appear that a very large number of personnel must be sampled in order to obtain more accurate results.

b. Loss of Work Due to Medical Problems

According to the responses to the survey the amount of time on the job lost because of physical injuries or medical side affects caused by alcohol consumption patterns is alarming. The variety of broken bones included eleven different types and numbered twenty-two. The internal problems which were reported included everything from liver

disease to malnutrition to a much lower than expected number of V.D. cases (6). There could be many reasons for the small number of V.D. cases reported. Two theories which immediately come to mind are (1) alcohol is used as a substitute for sex, particularly with prostitutes, who would be more apt to be infected than a woman in some other type of occupation, or (2) the majority of men sampled reported being assigned to a shore base prior to reporting for treatment. This would indicate that a relatively small amount of men surveyed were assigned to ship or shore stations overseas thus reducing the "opportunity" to be infected.

Because of the generalizations involved in assigning man-days lost because of medical illness as reported in this survey, it was decided that medical cost estimates would be more accurately determined by using a recently completed study conducted by Steven F. Bucky, Darrell Edwards and Pat Coben.[71] This study was based on hospital admission information gathered on 161 Naval enlisted men who had military service two years prior to treatment at an ARC and who had served two years after treatment. The number of sick days was accumulated by year and then an analysis was done to determine whether the proportion of total hospital days changed with time and treatment. Summarizing the results of the investigation shows that a reduction in the number

of sick days occurred after treatment, i.e., 4143 days before ARC vs 2228 after treatment. These statistics do not include the 51.7 days spent per man in the rehabilitation process.

By assuming that sobriety is defined as the discharge date from the ARC one can determine that the alcoholic spends 1.88 times as many days in the hospital as does the sober person or an average of 5.9 more days per year in the hospital.[72] By using the daily wage for each enlisted rate as tabulated from the Composite Standard Military Rate Tables contained in NAVCOMPTNOTE 7041 of 16 December 1974 and effective 1 January 1975, the minimum "real" cost to the Navy caused by man-days lost for medical purposes is calculated as follows:

E1 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$22.34}{\text{day}} = \$131.81$ per year per E1 alcoholic

E2 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$25.05}{\text{day}} = \$147.80$ per year per E2 alcoholic

E3 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$27.32}{\text{day}} = \$161.19$ per year per E3 alcoholic

E4 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$31.69}{\text{day}} = \$186.97$ per year per E4 alcoholic

E5 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$37.40}{\text{day}} = \$220.66$ per year per E5 alcoholic

E6 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$45.34}{\text{day}} = \$267.51$ per year per E6 alcoholic

E7 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$52.72}{\text{day}} = \$311.05$ per year per E7 alcoholic

E8 $\frac{5.9 \text{ days}}{\text{year}} \times \frac{\$59.90}{\text{day}} = \$353.41$ per year per E8 alcoholic

c. Loss of Work Due to Drinking Patterns

In order to determine costs of lost work time the procedure is more simplified. One needs only to take the estimated number of hours lost per individual per year and multiply by the hourly wage of each enlisted rating. Implicit in this procedure however is the assumption that the difference in individual rates does not influence the number of hours lost. In other words, it is assumed that it is equally likely that an E1 will absent himself from work because of drinking as it is for any other rate.

$$\frac{7455 \text{ total hours}}{110 \text{ alcoholics-yr}} = 67.77 \text{ hours per alcoholic per year}$$

E1 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$2.69}{\text{hour}} = \$182.30$ per year per E1 alcoholic

E2 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$3.13}{\text{hour}} = \$212.12$ per year per E2 alcoholic

E3 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$3.42}{\text{hour}} = \$231.77$ per year per E3 alcoholic

E4 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$3.96}{\text{hour}} = \$268.37$ per year per E4 alcoholic

E5 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$4.68}{\text{hour}} = \$317.16$ per year per E5 alcoholic

E6 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$5.67}{\text{hour}} = \$384.26$ per year per E6 alcoholic

E7 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$6.59}{\text{hour}} = \$446.60$ per year per E7 alcoholic

E8 $\frac{67.77 \text{ hrs}}{\text{year}} \times \frac{\$7.49}{\text{hour}} = \$507.60$ per year per E8 alcoholic

The reader must keep in mind that the estimates of hours lost are those reported by the alcoholic himself and

that these estimates are subject to various idiosyncracies of the patient, e.g., memory loss, hesitance to answer questions for fear of reprisals, etc. Many patients refused to give an estimate because they couldn't remember all of their absences and concluded that an inaccurate estimate would not be worthwhile. These estimates therefore are driven toward the most conservative level. "Foggy" estimates therefore were not included.

According to the survey over 10% of the alcoholics missed work 2-3 times per week or more and over 35% reported missing work at least once a month because of drinking. (With this rate of absenteeism it would seem that there should certainly be a better system of accountability in use in the Navy or that Officers and supervisors should be better trained in recognition and referral of problem drinkers.)

d. Legal and Administrative Expenses

The area of legal and administrative expenses is another area where many real costs are incurred as a result of a large loss of productive man hours. This area is cost consuming because it not only involves the alcoholic but also his Leading Petty Officer, his Division Officer, Exec, Commanding Officer, personnel in the disbursing office, the ship's office (personnel office) and in some cases other

officers and men (courts-martial). Additionally, violation of military and civilian legal codes are so numerous that on the average an alcoholic has been involved in formal legal proceedings a minimum of two times (1.35 military cases and .74 civilian cases per man).

Since the primary objective here is to determine a minimum estimate of cost the procedure followed in such determination of legal and administrative expenses was to: (1) Assume all military cases reported were handled at Captain's Mast (Non-Judicial Punishment) although several court-martial cases were reported. (2) Assume minimum ranks and rates of personnel involved and minimum time expended for the entire proceedings.

A typical scenario of a case for NJP might be as follows:

(1) An offense is committed.

(2) The person committing the offense is placed on report.

(3) The report chit is filed with the Executive Officer who appoints an Investigating Officer.

(4) The Investigating Officer interviews the accused and witnesses involved and reports his findings to the Executive Officer.

(5) The XO studies the findings of the Investigating

Officer, the accused's service record, interviews the accused, his Division Officer and leading Petty Officer and makes recommendations to the Commanding Officer.

(6) The CO reviews all information submitted by the XO and decides on a place and time for the Mast.

(7) Mast is held - those participating at Mast include the accused, his Division Officer, Leading Petty Officer, Executive Officer, legal yeoman, Commanding Officer and all witnesses concerned in the case.

(8) Guilt/Innocence is decided by the CO and appropriate administrative functions are carried out which reflect the outcome of the case.

For purposes of this study a very conservative estimate of the rank and rates of the individuals concerned as well as their time spent during the proceedings was made and are set forth below:

Accused	E5	2 hours	@ $ 4.68/hr = $ 9.36
Witness	E5	1 hour	@ $ 4.68/hr = $ 4.68
Master-at Arms	E7	1 hour	@ $ 6.59/hr = $ 6.59
Yeoman	E4	2 hours	@ $ 3.96/hr = $ 7.92
Investigating Officer	01	1 hour	@ $ 5.32/hr = $ 5.32
Division Officer	01	1 hour	@ $ 5.32/hr = $ 5.32
Division P.O.	E6	1 hour	@ $ 5.67/hr = $ 5.67
XO	04	2 hours	@ $11.02/hr = $22.04
CO	05	1 hour	@ $13.13/hr = $13.13
			Total = $80.03

The cost of the Captains Mast is calculated as follows:

$$\frac{\$80.03}{\text{mast}} \times \frac{1.35 \text{ masts}}{\text{alcoholic}} \times \frac{1}{5.5 \text{ yrs}} = \$19.64 \text{ per alcoholic per year.}$$

Witnesses involved will generally vary in number and rank/rate and, in the interest of determining a minimum cost, only one was included.

Civilian cases normally require less time loss by the majority but a greater time away from the job on the part of the alcoholic and his Division Officer or Leading Petty Officer.

The scenario for Naval personnel caught up in the legal proceedings of the civilian community would generally require the alcoholic to appear in civil court. It is also generally the policy of individual commands to insure that the accused's Division Officer or Leading Petty Officer accompany him to court. For a typical DWI charge the accused and his Division Officer would spend approximately three hours apiece at these proceedings (including travel time to and from) amounting to a cost of:

Accused	E5	$4.68/hr x 3 hrs	= $14.04
Division Officer	01	$5.32/hr x 3 hrs	= $15.96
		Total	$30.00/case

$$\frac{\$30.00}{\text{case}} \times \frac{.74 \text{ cases}}{\text{alcoholic}} \times \frac{1}{5.5 \text{ yrs}} = \$4.05 \text{ per alcoholic}$$

per year.

Total: Military = $19.64

Civilian = $ 4.05

$23.69 per alcoholic per year.

Although these costs on an individual basis appear quite small it must be remembered that the very conservative estimates of a typical scenario were made in order to ensure that minimum costs were obtained.

The reader must also consider that: (1) Over 25% of the military infractions perpetrated were Unauthorized Absence Offenses which naturally included additional days lost to work (in some cases over 20 days), (2) additional man hours were lost because of punishments received for the various offenses, i.e., brig and jail time, and (3) many of the civilian offenses were on a more serious level (assult, attempted robbery, breaking and entering, theft, child molesting, etc.) which would naturally require more time lost by the involved parties because of additional court time, legal conferences, etc.

5. TOTAL COST OF THE MALE ENLISTED ALCOHOLIC TO THE NAVY

Now that very conservative estimates of Navy costs incurred in the four areas considered have been determined on an individual basis it is possible to interpolate these

findings to obtain an estimate for Navy wide costs. The basis for the interpolation procedures are: (1) Supplementary Analysis of Drinking Problems, Navy Pilot Study, memorandum to the Director, Alcohol Abuse Control Program from Ira H. Cisin and Don Cahalan, Bureau of Social Science Research, Inc., dated 28 February 1973. The memorandum contained data from the results of a survey taken at two large CONUS and two large overseas Naval installations.[73] In summary the survey indicated that "38% of our Navy has self-reported serious life consequences because of frequent overdosing of alcohol."[74] "This survey presents tangible evidence as to the scope of the Navy-wide problem. The figures vary less than 1% from those taken in a larger (11,000) Army sample and correspond closely to related statistics on the total adult U.S. population."[75] The 38% figure when coupled with data presented at the Surgeon Generals Conference on 22 May 1970 which indicated that "40% of frequent, heavy drinkers develop alcoholism"[76] results in an estimate for the Navy alcoholism rate at 15%. (2) According to the survey referenced in Chapter I of this paper 15.5% of officers have been advised by a doctor, chaplain, member of the family, or close friend to stop or decrease his drinking.

The above studies support the hypothesis that approximately 15% of our Navy force are alcoholics. Using this

15% figure and the total on board strength of male enlisted personnel as of 31 December 1974 (463,165)[77] one concludes that there are approximately 69,450 male alcoholics in the enlisted ranks of the U.S. Navy. The percentage of alcoholics in each rate, as estimated by the survey, multiplied by the total number of male enlisted alcoholics in the Navy yields the number of alcoholics in each rate and is shown in the table below:

E1	.92%	x 69450	=	639
E2	11.92%	x 69450	=	8278
E3	21.1 %	x 69450	=	16454
E4	11 %	x 69450	=	7639
E5	22 %	x 69450	=	15279
E6	20 %	x 69450	=	13890
E7	11 %	x 69450	=	7639
E8	1.83%	x 69450	=	1271

The total number of alcoholics in each rate is used below to determine total cost estimates.

(1) Damage and Loss of Navy Property:

$\frac{\$6.61}{\text{alcoholic-yr}}$ x 69450 alcoholics = 459,064 per year

(2) Cost of Work Time lost because of Medical Problems:

$\frac{\$131.81}{\text{E1 alcoholic-yr}}$ x 639 = 84, 226 per E1 per year

$\frac{\$147.80}{\text{E2 alcoholic-yr}}$ x 8278 = 1,223,488 per E2 per year

$161.19
E3 alcoholic-yr x 14654 = 2,362,078 per E3 per year

$186.97
E4 alcoholic-yr x 7639 = 1,428,263 per E4 per year

$220.66
E5 alcoholic-yr x 15279 = 3,371,464 per E5 per year

$267.51
E6 alcoholic-yr x 13890 = 3,715,714 per E6 per year

$311.05
E7 alcoholic-yr x 7639 = 2,376,110 per E7 per year

$353.41
E8 alcoholic-yr x 1271 = 449,184 per E8 per year
$15,010,527 per year

(3) Cost of work time lost because of alcohol related absenteeism:

$182.30
E1 alcoholic-yr x 639 = 116,489

$212.12
E2 alcoholic-yr x 8278 = 1,755,929

$231.77
E4 alcoholic-yr x 7639 = 2,050,078

$317.16
E5 alcoholic-yr x 15279 = 4,845,888

$384.26
E6 alcoholic-yr x 13890 = 5,337,371

$446.60
E7 alcoholic-yr x 7639 = 3,411,577

$507.60
E8 alcoholic-yr x 1271 = 645,160
Total $21,558,849 per year

(4) Cost of work time lost because of legal and administrative procedures:

$$\frac{\$23.69}{\text{alcoholic-yr}} \times 69450 = \$\ 1,635,270$$

Total cost in the four areas thus equals:

(1)	459,064
(2)	15,010,064
(3)	21,558,849
(4)	1,635,270
Total	$38,663,710 per year

D. ANALYSIS OF RESULTS

Quite obviously the results of this study show that the "real" cost to the Navy because of alcoholism is very high. The costs obtained are considered to be a ground floor or bottom estimate of actual costs. Everything was done with one thought in mind - determine a minimum cost estimate.

Of the four areas investigated in this paper, area one (cost caused by damage to or loss of Navy property and equipment) is believed to be the lowest estimate. The costing figures were purposely kept low because the number of patients responding with specific, useable information on damage caused was minimal. The several minor theft and vandalism responses were not even considered in the costing. Additionally, no data from officers was used and probabilities are that alcohol related equipment damage caused

by officers is very high, e.g., one aircraft loss per year because of alcohol would obviously produce a tremendous increase in the total cost of damaged Navy property.

Estimates in areas two and three are probably the most accurate of the four areas examined, although both are admittedly minimum estimates. The reader is reminded that in the area of hospitalization the estimate obtained is a result of information gathered on in-patients only and that the less time consuming but more frequent trips to the dispensary or hospital for treatment of minor injuries (broken bones, sutures removed, cast removed, etc.) are not considered in the costing procedure. Likewise, the cost of medication or medicative materials were not considered nor were the standard costs of medical staff and facilities used by the patient. Such medical costs are important but are not believed to be significant in the determination of "real" costs to the Navy caused by alcoholism. The theory behind this assumption is that in the short run the staff and facilities are already available to treat personnel and the fact that one of the patients happens to be an alcoholic does not change the existence of the facilities nor their cost to maintain. However, over the long term, because the facilities may be reduced or expanded on the basis of several criteria, one being the frequency and

scope of medical illness reportedly associated with the alcoholic, these medical costs may, in fact, be affected.

The cost of man hours lost to productive work because of drinking patterns is considered to be a minimum estimate because of the reasons previously discussed in section IV C. However, it must also be remembered here that no data on officers was used in the survey nor in the interpolation of costs and it is this officer's opinion that it is much easier and more likely that an officer goes over to the club, drinks his lunch and remains the rest of the afternoon and evening than it is for an enlisted man. Additionally, it may be easier for an enlisted woman to remain away from work because of her drinking pattern than for an enlisted man because the normal tendency is to give the enlisted woman a little more leniency because of those things inherent in the female environment with which the male supervisor is not adequately familiar. Therefore the total Navy wide cost in this area would probably be increased at a higher rate than that determined for the enlisted man.

The cost estimate in the area of legal and administrative expenses is considered to be extremely conservative. To calculate that a single Captain's Mast costs only $80.03 in productive time lost is certainly understating the case.

In addition to the very conservative estimates of personnel and time involved, the deletion of court-martial proceedings from consideration served to make the estimate even lower.

In this area it is assumed that the additional legal and administrative expenses which may be incurred by the officer group and the enlisted female group is probably the same or greater, on the average, than in the case of the enlisted man. The reason for this assumption is that a tremendous amount of time and money is spent on investigations and formal proceedings when an officer is accused of some misconduct and although these occurrences are much fewer in number the costs are a significant amount higher. Hence, although there would be some additional costs on a Navy-wide basis they would not increase at the same rate as the group surveyed.

V. SUMMARY OF NAVY INVESTMENT IN THE ALCOHOLISM PREVENTION PROGRAM

"The cost of establishing and maintaining the Navy's Alcohol Rehabilitation Centers and Alcohol Rehabilitation Units for the first eight months of FY-73 was $3.2 million. During this period, 665 individuals have been returned to effective fleet duty. This represents a cost avoidance, in personnel replacement costs of $7 million, resulting in a net savings of $3.8 million."[78]

These are very impressive statistics considering that most of the cost involved was for the initial establishment of the facilities for the rehabilitative effort and that only a relatively few personnel had been returned to active duty (665).

By June 30, 1974, the Navy had treated more than 6000 persons and based on a two year monitoring program a success rate of approximately 70 percent has been achieved.

Since its inception on 22 August 1971, the Navy-wide program has cost the taxpayer more and more. Table one contains a breakdown of funds spent on the program and the Budget Submission for Fy-76 plus the transition budget from 1 July to 30 September 1975.

In addition to the total ($8,779,000) budget expense (or cost to the Navy of the Alcoholism Prevention Program)

TABLE 1.

ACTIVITY	Fiscal Year 1974 ($ in thousands)	Fiscal Year 1975 ($ in thousands)	Fiscal Year 1976 ($ in thousands)	Transition Budget ($ in thousands)
Treatment & Rehibilitation	5,728	5,984	6,548	1,640
Education	141	149	148	38
Training	1,149	1,280	1,310	327
Testing & Evaluation	153	182	299	74
Research & Development Planning, Direction	40	50	55	13
Coordination & Support	924	402	419	106
TOTALS	8,135	8,047	8,779	2,198

one must also consider the cost of man hours lost because of the institution of this program. Only two areas will be considered and only very general assumptions and estimates will be made.

A. COST OF MAN-DAYS LOST BECAUSE OF TREATMENT

In estimating these costs only treatment at in-patient facilities (ARU-ARC) will be considered, and the average alcoholic will be used as the basis for cost of man-days lost, i.e,, the average enlisted alcoholic is E5 and the average officer alcoholic is 04.

According to the statistics provided by Pers 64, 3210 patients were treated at Alcohol Rehabilitation Units and Centers during the calendar year 1974. Based on an average of 51.7 days per man for treatment which was reported in the study on hospitalization of alcoholics conducted by Dr. S.F. Bucky, et al ("Primary and Secondary Benefits from Treatment for Alcoholism") and based on other statistics, provided by Pers 64, i.e., that 2% of the 3210 were officers and 98% were enlisted, one can determine the yearly cost for rehabilitation.

Officers:

$$\frac{64}{yr} \times 51.7 \text{ days} \times \frac{\$88.16}{day} = \$ \ 291,704$$

Enlisted:

$$\frac{3146}{} \times 51.7 \text{ days} \times \frac{\$37.40}{day} = \$6,083,042$$

Total $\$6,374,746$

This total dollar figure for rehabilitation is believed to be a high estimate. One could easily argue that although the figure appears accurate on the surface it is actually inflated because the procedure followed assumes that prior to treatment the alcoholic is performing with 100% effectiveness. However, the results of research conducted in this area indicate that such is not the case and that the alcoholics performance level is well below that of the non-alcoholic. Consequently, a more realistic estimate would probably be some percentage of the $6.37 M figure which coincided with the percentage of effectiveness.

B. COST OF MAN-HOURS LOST BECAUSE OF ALCOHOL EDUCATION AND PREVENTION PRESENTATIONS AND SEMINARS:

In this area very broad assumptions are used in order to obtain results in dollars. For instance the assumption that every member of the Naval Service attends two hours of educational presentations over a period of one year is made. Although the explicit requirement has eluded the research by this author, two hours per individual is thought to be a very high figure.

Based on this two hour figure and the assumption that the average enlisted pay grade is E4 and the average officer pay grade is 03 the estimate for cost of lost man-hours is made:

Officer:

65,927 x $\frac{\$9.55}{hr}$ x 2 hrs = $1,259,205

Enlisted:

483,492 x $\frac{\$3.96}{hr}$ x 2 hrs = $3,829,256

Total $5,088,461 per year

By adding these figures to the FY-76 budget one comes up with an overall cost to the Navy for the Alcoholism Prevention Program of: $20,242,207.

VI. SUMMARY

A. CONCLUSIONS

Before drawing conclusions based on the research conducted and information gathered, one must again consider the restrictions and restrictive assumptions which were made when determining the cost estimates. First, the information gathered and the results obtained were based on written responses made to written questions, which left plenty of leeway for individual interpretation by the patients queried. Secondly, the reference group surveyed consisted of 110 male enlisted alcoholics (as identified by the Navy) who were located at an ARC and had progressed to the final stages of the treatment program before returning to the fleet. Third, a determined effort was made to use (1) minimum estimates of cost, and, (2) only data that could be legitimately interpreted as being directly/indirectly related to alcohol abuse, i.e., only "real" costs to the Navy caused by alcohol abuse were determined.

With this in mind a comparison of the yearly Navy investment in the Alcohol Prevention Program with the yearly cost to the Navy in the areas investigated can be made:

1. Navy Investment in the Alcoholism Prevention

Program = $20,242,207

2. Minimum Estimated Annual Cost to the Navy By Male Enlisted Alcoholics in Areas Investigated = $38,663,710

3. Minimum Estimated Annual Cost Navy-wide = $46,679,214[79]

From this comparison one can deduce that alcoholism is extremely costly to the Navy and that if the Alcoholism Prevention Program is an effective program and can bring about a reduced incidence of alcoholism, earlier recognition of the problem drinker and a good rate of return of alcoholics to effective fleet duty then it may be a cost effective endeavor as well as a very worthwhile moral endeavor. One must keep in mind, when considering the above comparison, that: (1) Many very costly areas were not investigated in this study e.g., Replacement/Retraining costs, cost of personnel working below their normal performance level, etc., and (2) Minimum cost estimates were made in the areas that were investigated.

This study has derived cost estimates for four areas which, to the authors knowledge, have heretofore not been derived. The costs themselves are minimum estimates and although limited to four specific areas of interest they can possibly be used in combination with future studies to determine a more accurate estimate of the overall cost

to the Navy as a result of alcohol abuse. In addition, the estimates could be utilized in conjunction with other studies, to determine the cost effectiveness of the entire Alcoholism Prevention Program. Since the scope of this paper does not include a broad enough base to develop such an important hypothesis, the author will not even attempt a rough guess in this area but will leave the matter open to future researchers.

The questionnaire and procedures, with modifications such as those recommended below, might also be used to aid future researchers in obtaining more accurate estimates of alcohol costs.

It is hoped that in examining some aspects of the Navy's alcohol problem that this paper will assist others in research and will in some way eventually benefit the alcholic himself and help him return, as a productive member, to society and the Naval Service.

B. RECOMMENDATIONS FOR FURTHER RESEARCH

Because the Navy's effort in the area of alcohol abuse is relatively young there have not yet been many studies conducted which are Navy oriented. To date much of the information used in the official policy statements of Department of Defense and the Department of the Navy are based on facts which have been gathered by civilian

researchers sampling the civilian population. It is obvious, however, that more and more Navy sponsored research is being carried out and since the Fiscal Year 1976 Budget for Testing and Evaluation, and Research, Development, Planning and Direction was almost double that in FY-74 it appears that the trend will continue.

Based on this assumption a good possibility exists for further research in the field of cost analysis and cost avoidance. In fact the Navy has recently contracted to have a study done on Replacement and Retraining costs associated with the Alcoholism Prevention Program.

Other research projects which should be considered include:

1. The cost of man-days lost because of confinement.
2. The cost of man-days lost because of Unauthorized Absences.
3. Possible Billet Cost reductions because of alcoholism reduction.
4. The measurement of a decreased performance or effectiveness level of the Navy drinker.
5. Most importantly-Is the Alcoholism Prevention Program effective? Does education reduce the incidence of alcoholism?
6. Does the rehabilitation effort effectively repair

the alcoholic and thus contribute to the effectiveness of the Navy?

On the hope that at some future time a project will be undertaken in the areas examined by this paper, the following recommendations are made to assist in improving techniques and results obtained herein:

1. GENERAL

a. Officers and females should be included in the reference groups of future studies.

b. A better grasp of the cost of medical problems treated should be obtained. Specifically, an understanding of the cost and time involved in treating "minor" injuries and broken bones resulting from fights and accidents is necessary.

c. Other reference groups could be used as the basis for gathering more data, for example: (1) a sampling of those alcoholics considered to be in the "success" category of rehabilitated alcoholics might provide more truthful responses. (2) a sampling of all identified alcoholics participating in treatment at ARC's, ARU's, and ARD's would provide a more desirable cross section of the Naval population. (3) Those personnel who themselves recognized their affliction and consequently volunteered for treatment might respond to questions more honestly and more fully.

2. REGARDING THE TOOLS USED BY THIS AUTHOR

a. More specific questions should be designed in order to ellicit more specific responses, for example: questions in the area of equipment damage and loss should attempt to pinpoint specific instances, identify the type of equipment and the extent of damage so that more realistic cost estimates can be made.

b. More exact statistics concerning military and civilian legal processes should be obtained. Specifically, the number of alcohol related NJP cases should be clearly differentiated from alcohol related courts-martial.

c. Determinations of days lost because of unauthorized absences and jail sentences should be made.

d. A better method of determining the cost of legal and administrative expenses should be derived. The procedure used in this study was based primarily on the authors own experience as well as the personal experience of several other officers who were interviewed, with the final scenario being downgraded to the point where minimum times and pay grades of personnel involved was assured.

Overall, if more control over the administration of the questions could be exercised, more accurate responses could very well be the outcome. The controlled environment might be one where questions are asked verbally of

the patient in a one on one situation with the interrogator using the patient's medical and service records as a basis for investigating specific areas of concern.

It is the author's opinion that such a controlled environment would facilitate the collection of more accurate data in general, and specifically, better information could be solicited in reference to 2 a, b, c and d above.

APPENDIX A

ALCOHOLICS ANONYMOUS' TWELVE STEPS TO SOBRIETY[80]

1. We admitted we were powerless over alcohol - that our lives had become unmanageable.

2. Came to believe that a Power greater than ourselves could restore us to sanity.

3. Made a decision to turn our will and our lives over to the care of God, as we understood Him.

4. Made a searching and fearless moral inventory of ourselves.

5. Admitted to God, tc ourselves, and to another human being the exact nature of our wrongs.

6. Were entirely ready to have God remove all these defects of character.

7. Humbly asked Him to remove our shortcomings.

8. Made a list of all persons we had harmed, and became willing to make amends to them all.

9. Made direct amends to such people wherever possible, except when to do so would injure them or others.

10. Continued to take personal inventory and when we were wrong promptly admitted it.

11. Sought through prayer and meditation to improve our

conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.

12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics, and to practice these principles in all our affairs.

APPENDIX B

THE QUESTIONNAIRE

1. Sex — M ( ) F ( )

2. Rate/Rank _____

3. Years of service
   a) Officer _____
   b) Enlisted _____

4. Age _____

5. Last Duty Station
   a) Shore ( )
   b) At sea ( )

6. Give a brief description of the job you held at your last assignment:

	Yes	No
7. Did you volunteer for treatment?	( )	( )

If no, EXPLAIN the circumstances surrounding your admission to the ARC; for example:

(a) Referred by CO because of disciplinary problems
(b) Referred by M.D. because of medical problems
(c) Referred by supervisor because of unsatisfactory job performance
(d) Other

8. When did you first begin to have problems (social, physiological, family, legal, financial, etc.) which were attributed to alcohol abuse?

19_____

9. Marital History:

( ) Married
( ) Single
( ) Divorced How many times?_____
( ) Separated How many times?_____

Were any of these divorces/separations precipitated by an alcohol problem?

Yes No
( ) ( )

How many?_____

10. After a prolonged time at sea do you believe that your consumption of alcohol

( ) Increases
( ) Decreases
( ) Remains the same
( ) Don't know

EXPLAIN:

11. When serving in a shore assignment do you believe that your consumption of alcohol

( ) Increases
( ) Decreases
( ) Remains the same
( ) Don't know

EXPLAIN:

12. Do you believe that you will be discriminated against in the future, or that your career will be hampered because of your having received treatment for alcoholism

( ) Yes
( ) No
( ) Don't know

EXPLAIN:

When answering the following questions please include the approximate date of each occurrence.

13. ALCOHOL RELATED PROBLEMS:

a) Explain the nature of all medical problems which may have been caused directly/indirectly by alcohol, for example: (1) personal physical injuries, (2) physical injury to others, (3) Medical; liver disease, gastric disorder, malnutrition, venereal disease, etc.

b) Explain the nature of any accidents, which may have been caused directly/indirectly by alcohol, for example: (1) damage to machinery or equipment, (2) automobile accidents occurring with Navy vehicles or in some way damaging Navy property, (3) other accidents which caused damage to Navy property:

c) Explain the nature of <u>each</u> legal problem which may have been caused directly/indirectly by alcohol, for example list all Captains' Masts with charges and sentences as well as any civil charges and sentences which may have occurred:

(1) Captains' Mast
  (a) Charge

  (b) Sentence

(2) Court-martial
  (a) Charge

  (b) Sentence

(3) Civil Court
  (a) Charge

  (b) Sentence

(4) Other

d) <u>Estimate</u> man hours lost on the job during the past year by: (1) Remaining away from work in the afternoon because of drinking at lunchtime and failing to return to work:

_____man hours

(2) Remaining away from work because of drinking the day/night before

_____man hours

(3) Estimate the frequency of occurrence of (1) and (2) above, for example once per week, three times per month:

_____

(4) Other (explain)

14. Explain the nature of any other occurrences which may have resulted in unnecessary cost to the Navy because of alcohol abuse; for example:

(a) Cargo lost
(b) Faulty decision making
(c) Errors in judgement
(d) Theft
(e) Other

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36. DOD DIRECTIVE 1010.2
SECNAVINST 5300.20
OPNAVINST 5300.6A
OPNAVINST 6330.1
BUMEDINST 5300.4

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49. Gellman, loc. cit.

50. "Alcoholism: New Victims, New Treatment", op. cit., p. 78.

51. Ibid., p. 79.

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56. New Headings, op cit., p. 10.

57. Ibid., pp 11-13.

58. Rader, W.C., Experiences and Treatment of Patients at the Alcoholic Rehabilitation Center Naval Hospital, Long Beach, California, May 1972.

59. Pursch, op. cit., pp. 15,16.

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61. Ibid.

62. Summary of the Program on Alcohol Rehabilitation at the Naval Regional Medical Center Long Beach, California, Prepared by the Alcohol Rehabilitation Center, Long Beach, California.

63. Ibid.

64. Ibid.

65. Fort, op. cit., p. 125.

66. New Headings, op. cit., p. 14.

67. Bureau of Medicine and Surgery, Department of the Navy US Navy Neuropsychiatric Research Unit, Report No. 74-53, Evaluation of Alcohol Treatment Programs, by M.A. Schuckit and D. Cahalan, p. 5.

68. Strachan, op. cit., p. 199.

69. "Alcoholism: New Victims New Treatment", op. cit., p.81.

70. Based on the results of the survey the average time prior to rehabilitation that the alcoholic began to encounter alcohol related problems was 5.5 years. Because the more meaningful 'cost per alcohol per year' is the desired result, the assumption that the average patient has been an alcoholic for 5.5 years was made.

71. Bucky, loc. cit.

72. This assumption is believed to be valid because the basic theme of the study is directed toward assisting future researchers who will attempt to answer the question of the cost effectiveness of the Alcoholism Prevention Program. The comparison used in this study could not be used if one were trying to determine how much money would be saved if alcoholism were totally eliminated; in this instance one would compare the alcoholic with the non-alcoholic and not with the sober alcoholic.

73. Tappan, op. cit., p. 88.

74. Ibid.

75. Ibid., footnote (1)

76. Ibid., p. 90, footnote (4)

77. Figures provided by the Statistics Branch of the Bureau of Naval Personnel (Pers 362).

78. Department of the Navy, Office of the Chief of Naval Operations, OPNAV INSTRUCTION 5300.6A, Subject: Navy Human Goals Plan, p. II-3, 13 December 1973.

79. Based on the discussion and assumptions made in the Analysis of Results section of this paper and the statistics on manpower for the total Navy provided by Pers 362, it is possible to translate the costs derived for the male, enlisted alcoholic into a very rough estimate of minimum total cost to the Navy per year in the four areas.

TOTAL STRENGTH US NAVY = 549,419

Officers = 65,927

Enlisted (Male) = 463,165

Enlisted (Female)= 20,327

It is obvious that when the officer group is included in the estimates that the average cost per alcoholic based on the CSMRT will be tremendously increased, however for purposes of obtaining a minimum estimate the average cost per alcoholic will remain the same.

It is also highly probable that the statistics concerning the number of occurrences gathered on the enlisted alcoholic would be increased at a higher rate in two areas (2,3) when theofficer group is included, however this also is excluded from the computation.

Recent studies of women alcoholics show that the alcoholism rate among women is on the rise and in fact a recent Navy study ("Alcoholism in Navy and Marine Corps Women-A First Look", by E.K.E. Gunderson and M.A. Schuckit) concludes that there is a higher incidence of alcoholism reported among enlisted women in the Naval Service than in any of the other groups in the Navy.

Based on this study the addition of women alcoholics in the cost estimation will be considered at the same rate as that considered for all others.

Therefore, a straight translation of numbers would certainly yield minimum Navy-wide results for costs associated with alcoholism.

(1)	549,419 $\times \frac{15}{100} \times \frac{\$6.61}{\text{alcoholic}}$	=	$ 544,748 per year
(2)	549,419 $\times \frac{15}{100} \times \frac{\$220.66}{\text{alcoholic}}$	=	$17,184,590 per year
(3)	549,419 $\times \frac{15}{100} \times \frac{\$327.60}{\text{alcoholic}}$	=	$26,997,516 per year
(4)	549,419 $\times \frac{15}{100} \times \frac{\$23.69}{\text{alcoholic}}$	=	$ 1,952,360 per year
	Total	=	$46,679,214 per year

80. Weston, D., Guidebook for Alcoholics, p. 46, Exposition Press, 1964.

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